

ABSTRACT OF THE DISCLOSURE

There is provided a control system capable of realizing a highly robust control having a large margin of stability. The ECU of the control system controls the air-fuel ratio of exhaust gases emitted from the first to fourth cylinders. The ECU estimates an estimation value of a detected air-fuel ratio, from a model defining a relation between the estimation value and a plurality of simulation values, and identifies an intake air amount variation coefficient such the estimation value becomes equal to a detected air-fuel ratio. The ECU calculates an air-fuel ratio variation correction coefficient according to the identified air-fuel ratio variation coefficient, on a cylinder-by-cylinder basis, and a learned correction value of the air-fuel ratio variation correction coefficient, on a cylinder-by-cylinder basis, and corrects a basic fuel injection amount by the air-fuel ratio variation correction coefficient and the learned correction value, on a cylinder-by-cylinder basis, to thereby calculate a final fuel injection amount.